

MAGNETIC ACTUATOR AND METHOD

ABSTRACT

A magnetic actuator includes a spool surrounded by a coil, a primary plate disposed at a first end of the spool, and a secondary plate disposed at a second end opposite the first end. A plunger is slidably disposed within respective annular portions defined by the spool and the secondary plate and surrounded by the coil energizable to urge the plunger toward the primary plate. A first spring biases a ball against a supply valve seat configured in either the primary plate or a valve seat assembly, while a rod having a first portion is in operable communication with the plunger and a second portion is in contact with the ball opposite the first spring. A second spring biases the plunger and rod toward an exhaust valve seat configured in either the primary plate or valve seat assembly, opposite the supply valve seat, wherein the supply exhaust valve seats are in fluid communication with each other via a bore therebetween connecting the supply exhaust valve seats. The bore is in further fluid communication with a control port intermediate the supply and exhaust valve seats, thus integrating the seats of the supply and exhaust ports, as well as the control port into one component.